

Biomedical Robotics
Assignment 3
Deadline: End of the semester

Group ____

Names _____

The goal of this assignment is to move a cursor on the screen using motion data. To do so you will be using Simulink which can be connected to your smartphone (make sure the add on: “MATLAB Support Package for Android” is properly installed).

- 1) Choose the signal you want to use considering the sensors of your smartphone.
- 2) Using the blocks provided by the support package collect the data with a proper sampling frequency (to run the model go on Hardware/Monitor and Tune).
- 3) Add a VR sink block in your model, load the file “8_palline_color.wrl” (To have an input on the block you have to enable the cursor translation). The VR sink allows you to design and try your code.
- 4) Design and implement a control to move the cursor (calibration/map etc.) and reach all the targets (note: the VR sink input is a xyz vector)
- 5) Once your code is ready try it with different configurations (for instance by placing the phone in different parts of your body like the arm or the chest), eventually setting different parameters. Save input and control signals with their time stamp in a file.
- 6) Practice in the control and show the difference between beginning and end of training while performing center-out reaching movements (from the center to a target and back). Also compare the performance among group members.
- 7) Prepare a report with screenshot of your model and all the considerations you have made during the assignment (i.e. which signal you choose and why; which type of control you wanted to achieve, which movements you tried, difficulties etc.). Consider taking pictures of your “experimental setup” and, if possible, make a video of your setup and your results with voice over describing the project and the results.